presented through a user interface representative of a user interface of the machine vision system being simulated.

20. (Amended) The vision system hardware component simulation system of claim 1, further comprising means for modifying at least one of the first and second models.

21. (Amended) The vision system hardware component simulation system of claim 1, wherein the vision system hardware component simulation system simulates at least one operation of the machine vision inspection system independent of at least one component of the machine vision inspection system.

22. (Amended) A method for simulating images based on the characteristics of at least one machine vision hardware component, comprising:

generating a simulated focus-dependent image of a virtual world containing at least one object based upon a first model that characterizes the at least one object and a second model that characterizes an optical system of a machine vision system being simulated; and

providing the simulated image to a user interface representative of a user interface of the machine vision system being simulated.

37. (Amended) A method for facilitating the generation of at least one machine control instruction for a machine having a machine vision system independently of at least one element of the machine vision system, the method comprising:

rendering a synthetic image of at least one object as viewed through the machine vision system based on a representation of at least one component of the machine vision system;

providing the synthetic image to a user interface representative of a user interface of the machine vision system; and

selecting a machine control instruction based at least in part on the synthetic image.

38. (Amended) The method of claim 37, wherein rendering the synthetic image comprises updating in real-time the synthetic image in response to a user altering the representation of at least one component of the machine vision system.

41. (Amended) A method for generating a synthetic image independently of at least one element of a machine vision system, the synthetic image simulating an image from the machine vision system, the method comprising:

initializing a scene of the synthetic image of at least one object as viewed through the machine vision system;

adding a workpiece model of at least one workpiece to the scene, the at least one workpiece positioned on a stage of the scene;

obtaining at least one of a position and an orientation of the stage relative to an optical system of the machine vision system;

rendering the scene based on at least one of the characteristics of the optical system and the obtained relative position and orientation of the optical system to generate the synthetic image; and

providing the synthetic image to a user interface representative of a user interface of the machine vision system.

Please add new claim 44 as follows:

--44. The method of claim 42, wherein lens effects include at least a depth of focus.--